
Mingo, Pilot Knob and Ozark Cavefish

National Wildlife Refuges

Draft Comprehensive Conservation Plan and Environmental Assessment

Table of Contents

Chapter 1: Introduction and Background	1
Introduction	1
Mingo National Wildlife Refuge	1
Pilot Knob National Wildlife Refuge	1
Ozark Cavefish National Wildlife Refuge	3
The U.S. Fish and Wildlife Service	3
The National Wildlife Refuge System	3
Refuge Purposes	4
Mingo National Wildlife Refuge	4
Pilot Knob National Wildlife Refuge Purpose	4
Ozark Cavefish National Wildlife Refuge Purpose	5
Refuge Visions	5
Mingo National Wildlife Refuge	5
Preamble	5
Vision Statement	5
Pilot Knob National Wildlife Refuge	5
Vision Statement	5
Ozark Cavefish National Wildlife Refuge	6
Vision Statement	6
Purpose and Need for Plan	6
Existing Partnerships	6
Volunteers and Friends Group	7
Museums and Repositories	7
History and Establishment	7
Legal Context	9
Chapter 2: The Planning Process	10
Preparation of the CCP	10
Public Involvement	10
Mingo National Wildlife Refuge	11
Pilot Knob National Wildlife Refuge	12
Ozark Cavefish National Wildlife Refuge	12
Summary of Issues, Concerns and Opportunities	12
Mingo National Wildlife Refuge	13
Pilot Knob National Wildlife Refuge	16
Public Use	16
Ozark Cavefish National Wildlife Refuge	17
Habitat Management	17
Public Use	17

Chapter 3: Refuge Environments and Management	18
Introduction	18
Mingo Wilderness Area	19
Special Management Areas	19
Geographic/Ecosystem Setting	19
U.S. Fish and Wildlife Service Ecosystems	19
Migratory Bird Conservation Initiatives	20
The North American Waterfowl Management Plan	21
Partners In Flight	21
Region 3 Fish and Wildlife Resource Conservation Priorities	22
Other Recreation and Conservation Lands in the Area	22
Socioeconomic Setting	24
Population and Demographics	24
Employment	24
Income and Education	24
Potential Refuge Visitors	24
Climate	25
Geology and Soils	25
Bottomland Soils	25
Upland Soils	25
Water and Hydrology	26
Refuge Resources	26
Plant Communities	26
Wetlands	26
Upland Forests	29
Fish and Wildlife Communities	29
Birds	29
Mammals	30
Amphibians and Reptiles	30
Fish	30
Threatened and Endangered Species	30
Threats to Resources	30
Invasive Species	30
Contaminants	30
Administrative Facilities	30
Archeological and Cultural Values	30
Visitation	31
Current Management	32
Habitat Management	32
Wetland Management	32
Moist Soil Units	33
Grassy Openings	34
Forests	34
Cropland and Food Plots	34
Fire Management	34
Fish and Wildlife Monitoring	34
Surveys	35
Studies and Investigations	35
Visitor Services	36

Open Areas and Closed Periods	36
Monitoring	38
Fees	38
Hunting	38
Fishing	38
Observation, and Photography	38
Interpretation	40
Environmental Education	41
Non-wildlife Dependent Recreation	41
Law Enforcement	41
Partnerships	41
Pest Management	42
Animal Species	42
Plant Species	42
Archeological and Cultural Resources	42
Special Management Areas	42
Farm Services Administration Conservation Easements	42
Pilot Knob National Wildlife Refuge	43
Introduction	43
Special Management Areas	43
Geographic/Ecosystem Setting	43
U.S. Fish and Wildlife Service Ecosystems	43
Migratory Bird Conservation Initiatives	45
Region 3 Fish and Wildlife Resource Conservation Priorities	45
Other Recreation and Conservation Lands in the Area	45
Socioeconomic Setting	45
Population and Demographics	45
Employment and Income	45
Education	45
Climate	45
Geology and Soils	45
Water and Hydrology	46
Refuge Resources	46
Plant Communities	46
Fish and Wildlife Communities	46
Birds	46
Mammals	46
Amphibians and Reptiles	46
Fish	46
Invertebrates	46
Threatened and Endangered Species	46
Threats to Resources	47
Invasive Species	47
Contaminants	47
Administrative Facilities	47
Archeological and Cultural Values	47
Visitation	47
Current Management	47
Habitat Management	47
Fire Management	47

Fish and Wildlife Monitoring	47
Visitor Services	48
Pest Management	48
Archeological and Cultural Resources	48
Special Management Areas	48
Ozark Cavefish National Wildlife Refuge	48
Introduction	48
Special Management Areas	48
Geographic/Ecosystem Setting	48
U.S. Fish and Wildlife Service Ecosystem	48
Migratory Bird Conservation Initiatives	48
Region 3 Fish and Wildlife Resource Conservation Priorities	48
Other Recreation and Conservation Lands in the Area	48
Socioeconomic Setting	48
Population and Demographics	51
Employment and Income	51
Education	51
Climate	51
Geology and Soils	51
Water and Hydrology	51
Refuge Resources	52
Plant Communities	52
Fish and Wildlife Communities	53
Birds	53
Mammals	53
Amphibians and Reptiles	53
Fish	53
Invertebrates	53
Threatened and Endangered Species	53
Threats to Resources	54
Invasive Species	54
Contaminants	54
Administrative Facilities	54
Archeological and Cultural Values	54
Visitation	54
Current Management	54
Habitat Management	54
Fire Management	54
Fish and Wildlife Monitoring	54
Visitor Services	54
Pest Management	55
Archeological and Cultural Resources	55
Special Management Areas	55
Chapter 4: Future Management Direction	56
Goals, Objectives and Strategies	56
Mingo National Wildlife Refuge Goals, Objectives and Strategies	56
Pilot Knob National Wildlife Refuge Goals, Objectives and Strategies	79
Ozark Cavefish National Wildlife Refuge Goals, Objectives and Strategies	81

Chapter 5: Plan Implementation	83
New and Existing Projects	83
Staffing	83
Partnership Opportunities	83
Step-down Management Plans	85
Monitoring and Evaluation	85
Plan Review and Revision	85
Archeological and Cultural Values	86
Appendix A:Draft Environmental Assessment	87
Appendix B:Glossary	183
Appendix C:Species Lists	187
Appendix D:Compatibility Determinations	209
Appendix E:Compliance Requirements	255
Appendix F: Refuge Operating Needs System and Maintenance Management System	261
Appendix G:Mailing List	267
Appendix H:List of Preparers	271
Appendix I: Bibliography	275
Appendix J:Resource Conservation Priority Lists	279

Mingo, Pilot Knob and Ozark Cavefish

National Wildlife Refuges

Draft Comprehensive Conservation Plan and Environmental Assessment

List of Figures

Figure 1: Location of Mingo, Pilot Knob and Ozark Cavefish National Wildlife Refuges	2
Figure 2: U.S. Fish & Wildlife Service Ecosystems of Contiguous States	20
Figure 3: Bird Conservation Regions	22
Figure 4: Other Conservation Lands in the Vicinity of Missouri National Wildlife Refuges	23
Figure 5: Hydrologic Features of Mingo National Wildlife Refuge	27
Figure 6: Landcover, Mingo NWR	28
Figure 7: Current Facilities, Mingo NWR	37
Figure 8: Hunting Areas at Mingo National Wildlife Refuge	39
Figure 9: Location of Mingo National Wildlife Refuge	44
Figure 10: Turnback Creek Unit, Ozark Cavefish NWR	49
Figure 11: Hearrel Spring Unit, Ozark Cavefish NWR	50
Figure 12: Ditch Structure	57
Figure 13: Locations and Future Cover Type Allocations of Grassy Openings, Cropland and Food Plots, Mingo NWR ..	61
Figure 14: Future Facilities, Mingo NWR	68
Figure 15: Current Staffing, Mingo NWR	84
Figure 16: Staffing Needed to Fully Implement the CCP, Mingo NWR	84

Mingo, Pilot Knob and Ozark Cavefish

National Wildlife Refuges

Draft Comprehensive Conservation Plan and Environmental Assessment

List of Tables

Table 1: Mingo NWR Research Natural Areas	19
Table 2: Invasive Plants and Animals at Mingo National Wildlife Refuge	31
Table 3: Main Habitat Management Units at Mingo NWR	33
Table 4: Invasive Plant Species and Their Control at Mingo NWR	42
Table 5: FSA Conservation Easements Managed by Mingo NWR	43
Table 6: Current and Future Condition of Mingo NWR Openings	62
Table 7: Additional Staffing Required to Fully Implement the CCP by 2022, Mingo NWR	83

